MYOPIA

How does visual acuity change over time in adults with high myopia?

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High myopes can expect to retain good vision during the working years of life

In the article by Shih and associates in this issue of *BJO* (p 546), the authors report on a retrospective study of visual outcomes in patients with high myopia seen at the National Taiwan University Hospital over a 10 year period. Clinical concern about management and severity of myopia is increasing, especially in Asia. In the United States, approximately 25% of people aged 12–54 years have myopia. In this report, the authors remind us that myopia is the fifth most frequent cause of impaired vision and the seventh most frequent cause of legal blindness.¹ The magnitude of the public health impact of myopia can be understood when considering that people with myopic retinopathy are legally blind for an average of 17 lifetime years, compared to 5 lifetime years of blindness caused by both diabetes and age related macular degeneration, and 10 lifetime years from blindness caused by glaucoma.² As people in developed countries age, we will surely see increasing levels of myopic blindness. This problem is heightened by the fact that myopia appears to be increasing on a yearly basis.^{3,4} Underscoring these health concerns, the US Food and Drug Administration held an advisory committee meeting in 2003, which looked at the issues pertaining to chronic medical therapy for myopia. Before we can understand the potential impact of myopia on quality of life and develop appropriate preventative therapies, we need good information on its natural history and the impact of myopic vision loss in the adult population. This article by Shih and associates is an important report defining the changes in vision and maculopathy in an adult myopic population over a 10 year period.

Shih *et al* present a retrospective analysis of 552 myopic patients, aged 40 years or older with 6 dioptres or more of myopia. The worse eye of each patient was studied and records were reviewed for refraction, biometric axial length, best corrected Snellen visual acuity, and macular status. Of these

552 patients, 230 cases with myopic maculopathy were identified and graded on a maculopathy scale.⁵ This scale grades maculopathy using levels M0–M5 as follows: M0 is a normal appearing posterior pole; M1 shows tessellation and choroidal pallor; M2 includes level M1 findings with posterior ectasia; M3 includes choroidal pallor and tessellation, with lacquer cracks and posterior staphyloma; M4 indicates the presence of M3 findings with focal areas of deep choroidal atrophy; and M5 includes findings in group M4 along with choroidal neovascularisation.

Visual outcomes for older myopes with maculopathy tend to be poorer than for their younger counterparts over the same period of time

Young age was a protective factor relative to final vision outcome. They found that 60% of patients over 50 years of age progressed to worse than 20/200 vision in 10 years. In contrast, vision remained better than 20/40 in over 90% of patients who began the review period between 40 years and 49 years of age. Less severe maculopathy was also protective regarding final vision outcome. At each age group, a more severe level of maculopathy was predictive of a greater chance of more than two lines of vision loss. For example, of patients studied in the 50–59 year age group, 47%, 60%, and 67% showed two lines worsening over 10 years in the M3, M4, and M5 groups, respectively. In the over 70 years age group, a two line loss was seen in 60%, 78%, and 80% of patients for the M3, M4, and M5 groups, respectively.

All patients aged 40 years and older had some myopic findings, which were graded as M2 or greater. Age and initial level of maculopathy play a part in the development of the severe complications of myopia according to these findings. It would have been helpful to have more than three categories to analyse the visual acuity data. The three categories of better than 20/40, 20/40–20/200, and worse than 20/200 allowed for large

changes within each group. A patient beginning and ending within the 20/40–20/200 category may have experienced a significant change of vision, say 20/40–20/100, which would not be reflected by the data. Also, the report does not discuss cataract development, and did not mention whether patients who had cataract extractions were kept in the study. As a result, the worsening of vision in the older age groups is difficult to interpret. Data in the study are from a single institution and patients are likely of predominantly Asian origin. Extrapolation of data to a broader population must be done carefully. We can infer from the study that high myopes can expect to retain good vision during the working years of life and that we can expect a trend of visual decline in later years, especially over 60 years of age.

The authors conclude that a significant difference between final visual acuity, age, refractive status, and axial length exists between groups with and without maculopathy. They state that visual outcomes for older myopes with maculopathy tend to be poorer than for their younger counterparts over the same period of time. These findings, along with those mentioned above, are important for the counselling of myopic patients. This research presented by Shih and associates will hopefully stimulate further investigation into mechanisms leading to the development of advanced myopic degeneration and foster therapies for intervention at an early stage in the course of disease that may decrease functional loss later in life.

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